

# **Response to Great Lakes Legacy Act Request for Projects**

## **Upper Trenton Channel Remedial Action Wyandotte/Riverview, Michigan**

December 16, 2022

Prepared for:

U.S. Environmental Protection Agency – Great Lakes National Program Office

Prepared on behalf of:

BASF Corporation, Legacy Site Services LLC (agent for Arkema Inc.), and

Union Carbide Corporation

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## Executive Summary

The Trenton Channel waterway, part of the Detroit River Area of Concern, is located downstream of the urban industrial centers of Detroit. A series of sediment studies completed by public and private entities since the 1980s have documented chemical contamination of sediments along the Wyandotte and Riverview, Michigan shorelines of the Upper Trenton Channel (UTC). From a regulatory perspective, such chemical contamination is assumed to cause Beneficial Use Impairments including benthos degradation and other impacts associated with contaminated sediment. BASF Corporation, Legacy Site Services (agent for Arkema Inc.) and Union Carbide Corporation are applying as the non-federal sponsors for Great Lakes Legacy Act support to complete sediment remediation in the UTC. These applicants may be joined by other non-federal sponsors at a later date.

The preferred remedial alternative for the UTC was selected by consensus of the Great Lakes Legacy Act UTC project partners in a focused feasibility study (CH2M Hill and Arcadis U.S., Inc. 2013) and refined further in a Basis of Design Report (BODR) (CH2M 2019), which is substantially complete. The final BODR will be completed in 2023.

The proposed project is to implement the remedy described in the final BODR, which will reduce chemical contamination of sediments and thus facilitate removal of the Beneficial Use Impairments that have been identified for the site. Improved conditions resulting from implementation of the remedy will contribute toward delisting the Detroit River Area of Concern. The total estimated budget for this project is \$100M. The non-federal sponsors will provide up to 50% of project costs through a combination of cash and in-kind services.

# Project Description Narrative

## I. Project Title

Upper Trenton Channel Remedial Action, Wyandotte/Riverview, Michigan.

## II. Objectives

BASF Corporation (BASF), Legacy Site Services (LSS) (agent for Arkema Inc.), and Union Carbide Corporation (UCC) (collectively the non-federal sponsors) are requesting to partner with the United States Environmental Protection Agency (USEPA) Great Lakes National Program Office (GLNPO) through the Great Lakes Legacy Act (GLLA) to complete sediment remediation within the Upper Trenton Channel (UTC) project area in the Detroit River (a map is included as Appendix A).

To support this goal, a focused feasibility study (FFS) was completed in 2013 (CH2M Hill and Arcadis U.S., Inc. [Arcadis] 2013; included as Appendix B), which included a remedial alternatives evaluation and an analysis of short- and long-term effects for the listed alternatives. A preferred remedial alternative – a modification of FFS Alternative 4 – was subsequently selected by consensus of the GLLA UTC project partners and was further refined in a Basis of Design Report (BODR; CH2M 2019; included as Appendix C). The BODR, which is substantially complete, is currently being revised to incorporate treatability study results into the water treatment design and will be finalized in 2023.

The following remedial objectives were described in the FFS:

1. Support restoration of beneficial uses by reducing the mass, volumes, and concentrations of constituents of concern (COCs) in the sediment.

The proposed project will reduce chemical contamination of sediments and thus facilitate removal of the Beneficial Use Impairments (BUIs) that have been identified for the site.

2. Implement actions to achieve short- and long-term reductions in risks to human health and the environment.

This will largely be achieved by remedial objective No. 1 above, but short- and long-term targets were also developed for certain COCs to remove the most mass and volume of sediment (including those areas that meet Toxic Substances Control Act definitions of contamination for polychlorinated biphenyls [PCBs]) to achieve the greatest environmental gain and to minimize risks and exposures during the implementation of the remedial action.

The FFS also described a third remedial objective, which was to improve site habitat through targeted restoration efforts. The UTC project, as described in the BODR, does not include components specific to habitat restoration; however, achievement of the remedial objectives listed above will contribute to delisting the Detroit River Area of Concern (AOC) by remediating sediments that may contribute to BUIs in the UTC, including degradation of benthos.

# **III. Justification**

## **Current Site Conditions**

The UTC includes a federally maintained navigational channel of the Detroit River, downstream of the industrial centers and the urban center of Detroit, and part of the Detroit River AOC (see Appendix A). The USEPA GLNPO has identified 11 BUIs in the Detroit River AOC, including aquatic life impairment, impaired recreational uses (e.g., sport fish consumption), and degradation of benthos, which may be related or attributed to sediment contamination.

The Trenton Channel has been impacted by historical contamination from industrial uses, municipal discharges, sewer overflows, and urban runoff from surrounding communities. Many diverse point sources and diffuse industrial and municipal non-point sources throughout the watershed have contributed to environmental degradation (Hartig et al. 2009, 2014, 2015; CH2M Hill and Arcadis 2013). Sediment data within the UTC study area have been collected by public and private entities, including the Michigan Department of Environmental Quality (MDEQ; 1993-1996, 2000, 2004, and 2007), Conestoga Rovers and Associates (CRA; 2005-2006), USEPA's GLNPO (USEPA and MDEQ 2006 and 2007), Arcadis (2008 and 2009), and CH2M Hill (2011); (applicable reports are listed in the References). Sediment data were also collected as part of three separate pre-design investigation events performed to inform the remedial design. The BODR (CH2M 2019) provides a comprehensive summary of the sediment data collected. These data show that chemicals have contaminated sediments in the UTC. The data were utilized to develop the remedial design within the project area, which spans 3 miles along the western shoreline of the UTC (extending up to

approximately 300 feet from shore) and includes nine subareas totaling approximately 36.7 acres (see Appendix C). COCs selected to provide the basis for remedial design in the UTC contribute to risk but are also co-located with numerous other contaminants in depositional areas; therefore, these COCs were selected as the basis for remedial planning. The COCs used to design the project are PCBs, mercury, total polycyclic aromatic hydrocarbons (PAHs), chlorinated naphthalenes, pH level (which is better described as a sediment condition), and nonaqueous phase liquid (NAPL; which consists of free-phase hydrocarbons that are a combination of constituents or indicator of contamination) (CH2M 2019).

While the sediment chemistry data within the project area reflect numerous historical sources and the depositional nature of shoreline areas along the UTC, the potential for recontamination following dredging is low relative to existing levels of contaminants in surface sediments and to historical levels of contamination (CH2M Hill and Arcadis 2013).

## **Potential Outcomes of Objectives**

Implementation of the remedial action would achieve the remedial objectives identified in the FFS (CH2M Hill and Arcadis 2013):

1. Support restoration of beneficial uses by reducing the mass, volumes, and concentrations of COCs in the sediment.

The remedial design includes dredging approximately 214,000 in situ cubic yards of sediment over 36.7 acres, with placement of a residuals management cover (RMC) where needed to minimize resuspension of contaminated sediment and reduce residual exposures that may remain following dredging. These actions will reduce the total mass



and volume of COCs in UTC sediments and post-remedy exposure levels of COCs in remaining surface sediments.

Remediation of contaminated sediment in the project area will make progress toward eliminating the following BULs in the Detroit River AOC (CH2M Hill and Arcadis 2013):

- Restrictions on fish and wildlife consumption
- Degradation of benthos
- Loss of fish and wildlife habitat
- Fish tumors or other deformities.

2. Implement actions to achieve short- and long-term reductions in risks to human health and the environment.

As described in the BODR (CH2M 2019), cleanup goals were developed for COCs to support removal of the most mass and volume of sediment to achieve the greatest long-term environmental gain, while minimizing short-term risks and exposures during remedial activities. Long-term reductions in risks to human health and the environment will largely be achieved through the first remedial objective (i.e., support restoration of beneficial uses by reducing the mass, volumes, and concentrations of COCs in the sediment). Short-term impacts to water and air quality from dredging activities will be minimized by employing best management practices including monitoring and testing of the water treatment system to meet discharge permit requirements, monitoring of water quality in the river and implementing modifications to remedial activities when necessary, and completion of post-dredge confirmation sampling for all dredge management units (CH2M 2019).

## IV. Approach and Methods

The FFS identified and screened appropriate remedial technologies for the UTC, and then developed and evaluated a range of alternatives that would utilize these technologies to complete sediment remediation at the site. The consensus remedial approach, as documented in the BODR (CH2M 2019), has the following components:

- Removal of soft sediment to native clay, to the extent practicable, using hydraulic dredging methods from the North Works subarea and placement of an RMC consisting of sand amended with siderite to address elevated pH within dredge residuals.
- Removal of sediments exceeding cleanup goals using hydraulic dredging methods from the Silver Shores Marina, Wyandotte Power, and Bishop Park subareas and placement of an RMC consisting of sand.
- Removal of soft sediment to native clay, to the extent practicable, using hydraulic dredging methods from South Works A and B, Wye Street, East Plant, and Firestone subareas; and placement of an RMC consisting of sand.
- Removal of Toxic Substances Control Act-level sediments to native clay within the Wye Street subarea using mechanical dredging methods. After the initial dredging is complete in the Wye Street subarea, a sweeping dredge pass using a plain-suction hydraulic dredge will be performed in the area prior to confirmation sampling.
- Placement of an organoclay-amended RMC applied within the dredge management units where NAPL observations or a surface-weighted average concentration exceedance occurs, as determined by post-dredge confirmation sampling.

- Incorporation of an organoclay-amended cover layer and adequate erosion protection within the shoreline offset and dredge-slope areas to stabilize the sediments that remain after dredging.
- Installation of erosion protection on the 3:1 side slopes over the RMC and between existing shoreline structures and the 10-foot shoreline offset. No erosion protection will be installed on the RMC beyond the toe of the 3:1 dredge slope on the channel (east) side of the dredge area.

In total, approximately 214,000 in situ cubic yards of sediments (including overburden and over dredge) over 36.7 acres will be removed. Drawings C-206 through C-224 in Appendix A of the BODR (CH2M 2019; see Appendix C of this application) show the planned extent and thickness of dredging in the UTC.

The estimated schedule provided in Part VII provides target milestones and tentative completion dates for major tasks associated with the UTC remedial action. No operation and maintenance activities or associated costs have been identified for this project.

## **V. Impact Assessment**

The proposed project would reduce risks associated with sediment contaminants and benefit the Detroit River AOC by moving toward the delisting of BUIs in the UTC, consistent with the Restoration Criteria Review for the Detroit River AOC (Friends of the Detroit River 2008). While the proposed remedy does have potential for short-term impacts to water and air quality, these can be minimized through proper permitting and planning, as well as adherence to environmental controls and monitoring during execution of the project (CH2M 2019). Short-term impacts of the proposed remedy on benthic habitat and macroinvertebrate and fish communities are expected to be

resolved by recolonization from upstream river segments, and offset by long-term improvements in exposure and habitat conditions. Implementation of the proposed remedy will support removal of BUIs and contribute toward delisting the Detroit River AOC.

## VI. Stakeholder Involvement

Stakeholders and anticipated roles for the project are summarized in the table below.

Stakeholder	Role
<b>USEPA – GLNPO</b>	Will administer GLLA and Non-federal Sponsor funding for the project. Will manage the project.
<b>USEPA – Office of Resource Conservation and Recovery</b>	Will receive progress updates from USEPA GLNPO.
<b>Michigan Department of Environment, Great Lakes, and Energy</b>	Will be invited to participate in project calls/meetings.
<b>Non-Federal Sponsors (BASF, LSS, UCC, and potentially other entities)</b>	Will provide co-funding with GLLA. Will participate in project calls/meetings. Will review and provide comments on technical submittals during remedial construction. Will facilitate access and coordination with upland facilities during construction.
<b>Detroit River Remedial Action Plan Coordinator</b>	Will be kept informed of project progress.
<b>Cities of Wyandotte and Riverview</b>	Will be kept informed of project progress and may assist with public meetings.

## VII. Timeline

From completion of a Project Agreement, it is estimated that the proposed project will be completed in approximately 26 months from contract award, with a goal of completing all in-water construction activities during 2026 and final demobilization activities by September 2027. The current critical path for this schedule is completion of the final BODR (which is not part of this application). The estimated project milestone timeline is shown in the table below.

Task/Milestone	Estimated Milestone Date
Technical Review Committee Presentation of Proposed Project	March 2023
Final Design and Specifications (being completed under separate project agreement)	September 2023
USEPA and Non-federal Sponsors Project Agreement for Remedial Construction	March 2024
Permitting and Bid Package Preparation	January 2025
Contract Award / Commence Construction	July 2025
Completion of In-water Construction	September 2026
Complete Demobilization Activities	September 2027
<b>Total project duration following contract award:</b>	<b>26 months</b>

## VIII. Budget

The preliminary cost estimate to implement the remedy described in the BODR is approximately \$100,000,000; this includes administrative and management projections and a \$5,000,000 contingency. Costs may be refined and updated as the BODR is finalized. The non-federal sponsors have committed to funding up to a 50% cost share for the project through a combination of cash and/or in-kind contributions.

Task/Assumptions	Estimated Cost
Construction / Contractor Costs	\$91,000,000
Oversight Costs	\$4,000,000
Contingency	\$5,000,000
<b>Total:</b>	<b>\$100,000,000</b>

Details of estimated project costs were provided by Heather Williams of USEPA GLNPO via email on October 26, 2022. No additional details on the budget breakdown by task were available to the non-federal sponsors at the time this application was prepared. No operation and maintenance costs have been identified for this project.

## IX. Area of Concern Documentation

The Detroit River AOC encompasses 32 miles from Lake St. Clair to Lake Erie, and drains portions of Michigan and Ontario, Canada. Documentation that the proposed project is located within the Detroit River AOC is provided in Appendix A.

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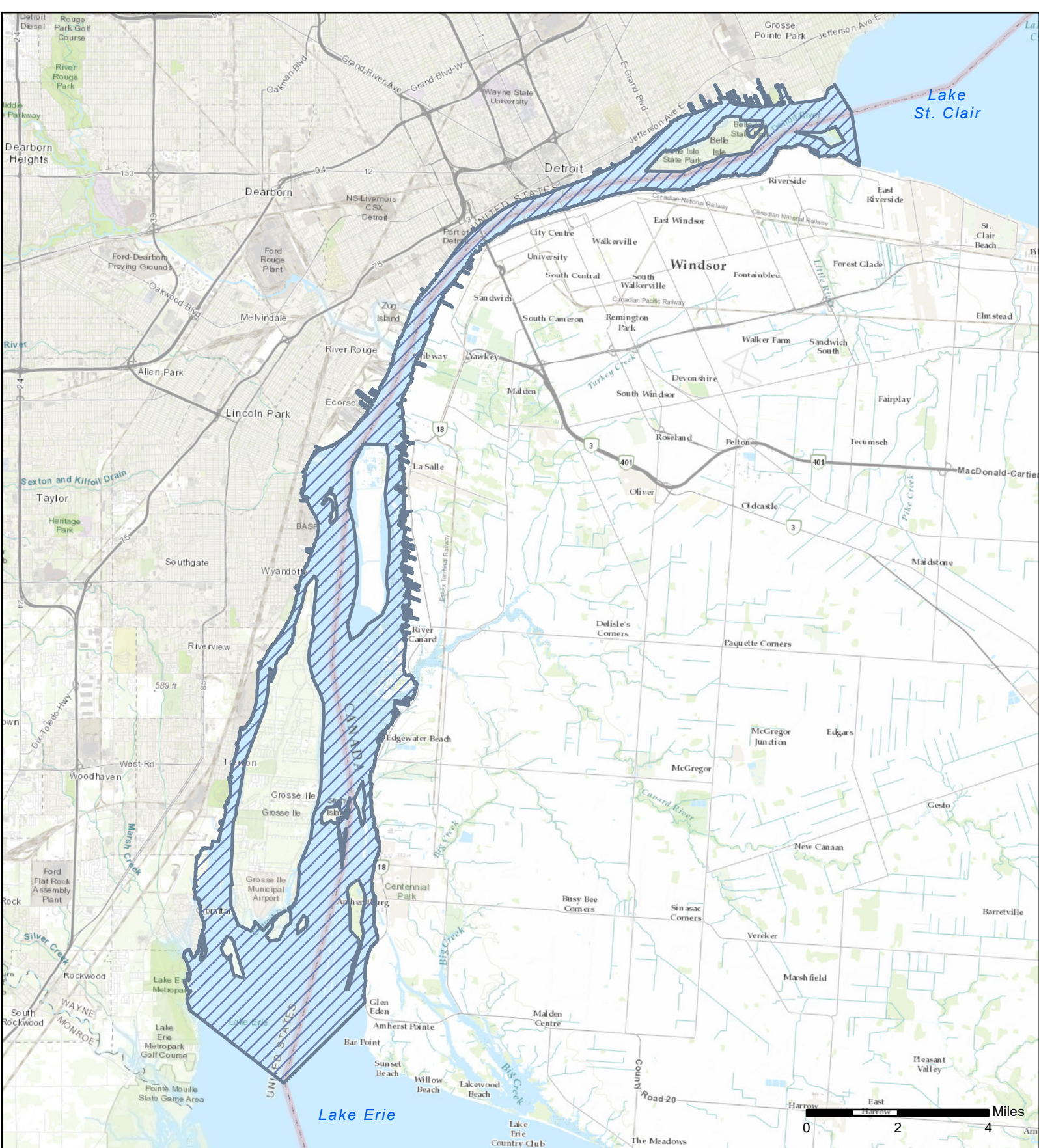
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# **Appendix A**

**Documentation: Map of Upper Trenton Channel in the Detroit River Area of Concern, Michigan**



# Detroit River Area of Concern Michigan



 Area of Concern

Map projection: UTM Zone 17, NAD 1983

Data sources: ESRI, NOAA, EGLE

Created: March 2021



# **Appendix B**

## **Final Focused Feasibility Study Report for the Upper Trenton Channel, Detroit River Area of Concern, Wyandotte, Michigan**

(Provided on disk)

# **Appendix C**

**Final Basis of Design Report for the Remedial Design of the  
Upper Trenton Channel, Detroit River Area of Concern,  
Wyandotte, Michigan**

(Provided on disk)